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ARD4

Autonomous Recording Device

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1. GENERAL INFORMATION

1.1 About this Manual

This manual describes the components, installation and operation of the CPAT Tech ARD4, DRV3, DRV3 *Lite*, DRV4 and ITX2 units.

You will find important safety information in this manual. We strongly recommend that all users read this manual. Use of this product other than for its intended application may compromise the unit's safety features.

1.2 Explanation of Symbols Used

The following symbols are used in this Manual:

Direct current. (DC)

Caution. Indicates that operations or procedures, if carried out without caution, may cause personal injury or damage to the unit.

Note. Indicates additional information about the product.

1.3 Technical Support

CPAT Tech Technical Support Service is available from Monday through Friday from 9:00 AM to 5:00 PM Eastern Time.
Toll free from U.S. and Canada: 1-888-307-2728 / International: +1-514-307-2728

support@cpat.tech

1.4 CPAT Tech Website

CPAT Tech's website contains product specifications, information, press releases, brochures, downloads and Frequently Asked Questions (FAQ). Please visit our website at:

www.cpat.tech

2. Product Description

The CPAT TECH is a modular monitoring platform that detects, records and dispatches signal leakage and ingress events in coaxial networks. The system is installed in a service vehicle and operates automatically. The CPAT platform provides web access to third party webenabled devices or through cellular communication to upload data to a centralized CPAT web server site.

ARD4:
The ARD4 (Autonomous Recording Device) is the control module for the platform. It is installed in a service vehicle and is powered from the vehicle's electrical system. The ARD4 begins monitoring as soon as it is powered up and uploads data in real time back to the CPAT Web or stores the data in memory. The ARD4 can be equipped with Wi-Fi and LTE communication modules. The ARD4 accepts other CPAT Tech add-on modules for increased monitoring capability.

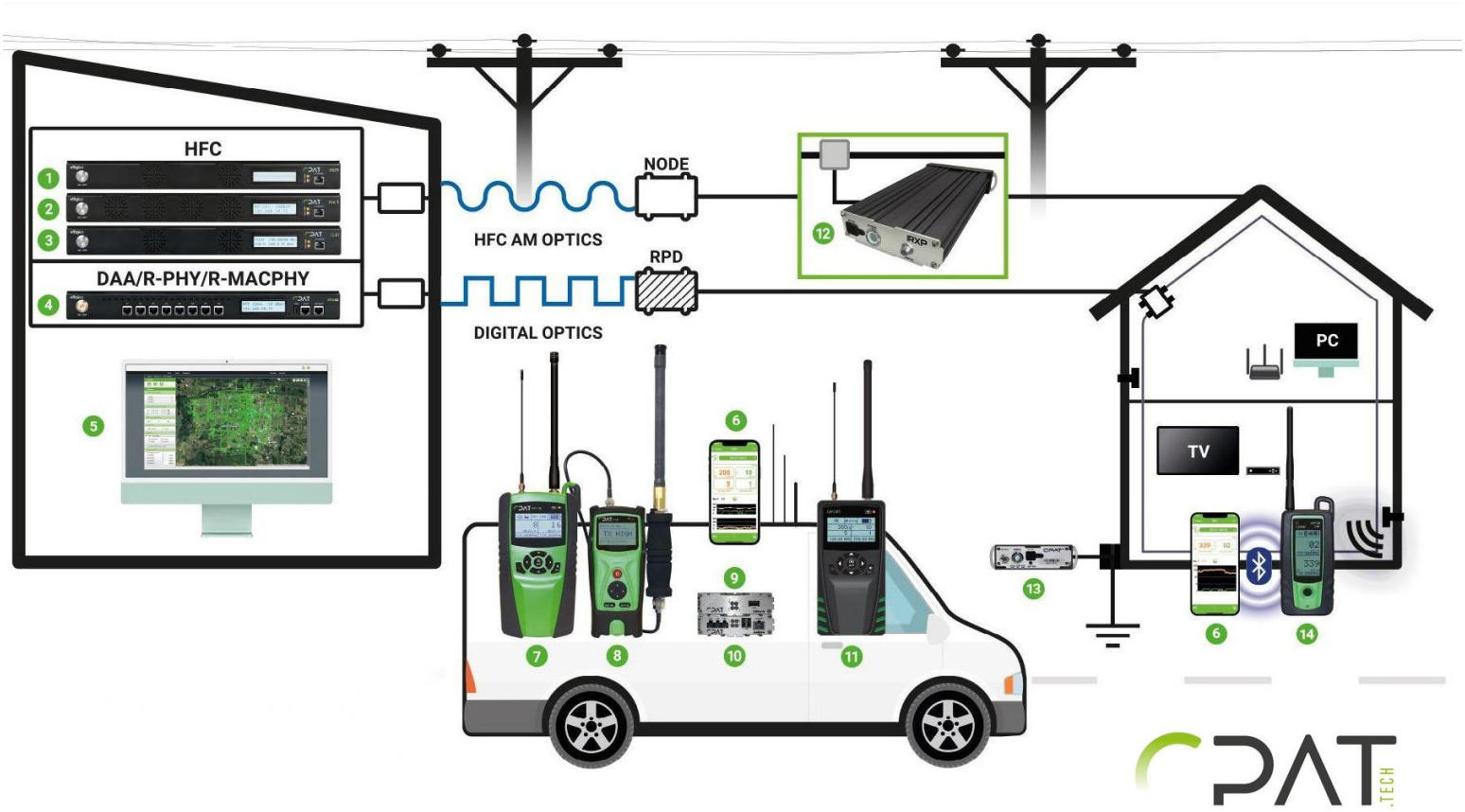
ITX2: (optional)
The ITX2 (Ingress transmitter module) is a portable radio transmitter that continuously transmits a low-power test carrier signal in the upstream band (5-42 MHz) to detect ingress faults. It can be used as a portable find-and-fix tool or can be plugged into the ARD4 module to automatically locate ingress impairments while driving in the operator's territory as part of the technician's daily work routine.

DRV4: (optional)
The DRV4 is a module that can connect to the ARD4. The DRV4 is a dual-band leakage detection receiver that works with the ARD4 to automatically detect, measure and position leakage events. It operates from 118 to 140 MHz (Mid band tuner) and from 572 to 860 MHz (LTE band tuner).

DRV3 *Lite*: (optional)
The DRV3*Lite* is a portable signal leakage detection meter designed to operate in all-digital cable networks. It functions as a mid-band portable find-and-fix meter and as a monitoring device as part of the CPAT TECH system. It is frequency agile from 118 to 140 MHz.

DRV3: (optional)
The DRV3 is a portable signal leakage detection meter designed to operate in all-digital cable networks. It functions as a portable dual-band find-and-fix meter and as a monitoring probe when part of the CPAT Tech system. It is frequency agile from 118 to 140 MHz (Mid band tuner) and from 572 to 960 MHz (LTE band tuner). The DRV3 can easily be setup via its intuitive user interface.

CPAT Tech Product platform diagram



1. HEAD-END DIGITAL SIGNAL GENERATOR (DSG1)
2. HEAD-END INGRESS RECEIVER (IRX1)
3. FOUR-BAND HEAD-END DIGITAL SIGNAL GENERATOR (DSGXT)
4. INGRESS DETECTION PLATFORM (IRXD)
5. WEB-BASED MANAGEMENT APPLICATION (CPAT WEB)
6. MOBILE LEAKAGE DETECTOR APPLICATION (MOBILE APP/DRV)
7. PORTABLE DUAL-BAND LEAKAGE DETECTOR (DRV3)
8. PORTABLE INGRESS RADIO TRANSMITTER (ITX2)
9. VEHICLE-BASED LEAKAGE DETECTION MODULE (DRV4)
10. AUTONOMOUS RECORDING DEVICE (ARD4)
11. PORTABLE DIGITAL LEAKAGE RECEIVER (DRVXT)
12. STRAND-MOUNTED PORTABLE INGRESS RECEIVER (IRXP)
13. PORTABLE DIGITAL SIGNAL GENERATOR (DSG1 LITE)
14. PORTABLE DIGITAL LEAKAGE RECEIVER (DRV3 LITE)

3. System Components

3.1 ARD4 Module

ARD4 Front View

ARD4 Rear View

ARD4 LTE	PN# 150-00036-100
ARD4 WIFI	PN# 150-00020-100

DIN Rail Mounting Kit
PN # 006-00014-100

Power Cable
PN # 036-00017-001

Rail Stoppers
PN # 006-00015-100

Rail Screws
PN # 006-00011-100

Wi-Fi Antenna PN # 111-00002-001

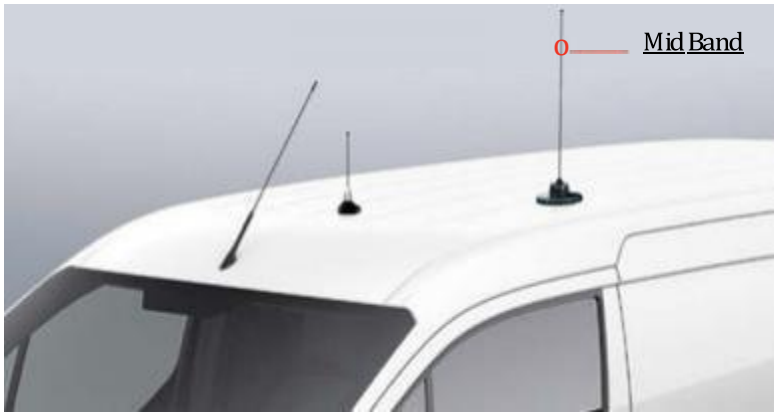
LTEAntenna
PN # 111-00017-001

GPS Antenna
PN # 111-00016-001

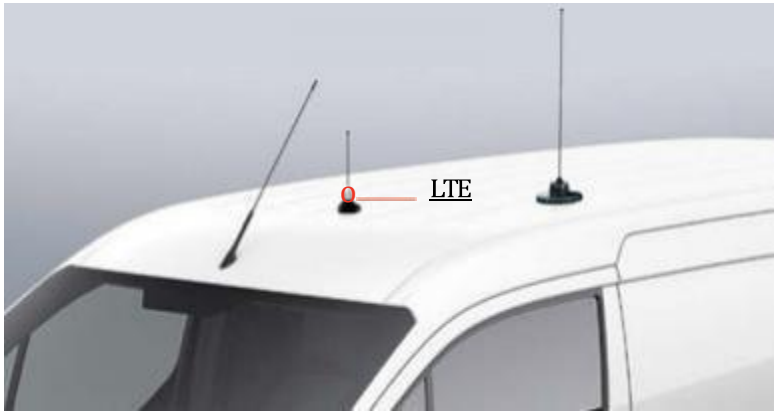
3. 2 DRV4 Module (optional)

DRV4 Front View
PN # 150-00035-100

Interconnection Cable (4 pin connector)
PN # 036-00029-001



Mid-Band Monopole Antenna Kit PN# 112-00004-100



LTE-Band Monopole Antenna Kit
PN# 112-00009-100

Vehicle Mount 6.78 MHz Antenna kit PN# 112-00001-100
3.3 ITX2 Unit (optional)

ITX2 Front View
PN#150-00026-100

ITX2 Antenna, coax cable and UHF adapter (female-female)

Coax Cable 48in. UHF to BNC male RG58	PN#037-00011-001
Portable antenna 6.5in. with BNC @ 6.78MHz	PN# 111-00036-001
Adapter UHF-F to UHF-F	PN# 039-00027-001

3.4 DRV3 *Lite* Unit (optional)

DRV3 *Lite* Front View
PN# 150-00033-200

DRV3*Lite*USBCable
PN# 036-00020-001

3.5 DRV3 Unit (optional)

DRV3 Front View
PN# 150-00031-100

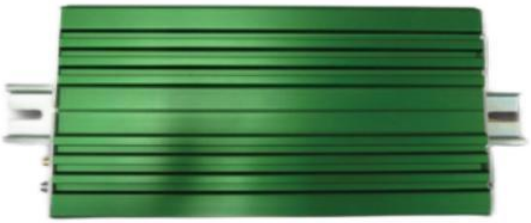
DRV3 Cradle Mount
PN# 150-00032-001

4. Physical Installation

See «Modules Physical Installation» sheet for an overview of unit's assembly, on page 40

4.1 ARD4 Module Installation

The ARD4 box must be installed inside the vehicle, in a place not directly exposed to the sun. The support rail must be installed using the rail screws and should be installed in a horizontal position. The ARD4 will slide into the support rail and a rail stopper will be used on each side of the unit to keep it securely in place.



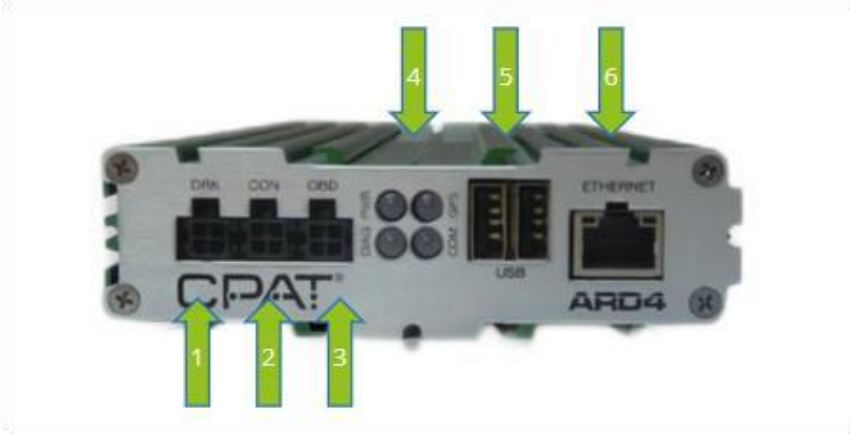
Top View

Front View

The GPS and wireless antenna's location may affect the signal's integrity and should be installed on the vehicle roof clear of any objects. System connectors are located on both sides of the ARD4 unit. The position of each connector, LED and slot are clearly indicated. Here is a more detailed description of their usage:

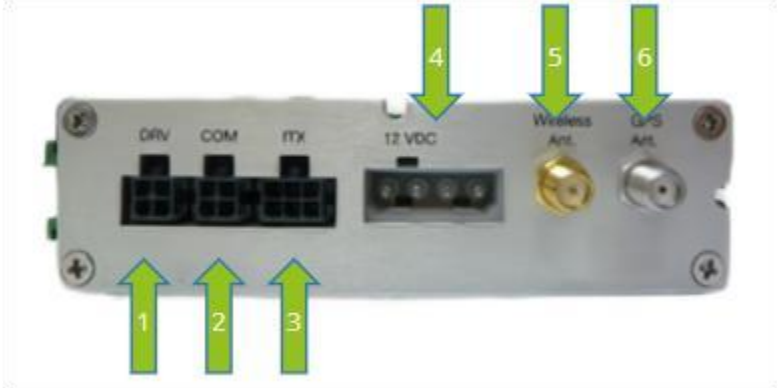
Front panel (From left to right)

1	DRK	(Dead Reckoning)
2	CON	(Reserved Port)
3	OBD	(On-Board Diagnostic)
4	Status LEDs	(Power, GPS, Diagnostics, Communication)
5	2 USB Host ports	(USB type A)
6	Ethernet	(RJ45 connector)



Rear panel (From left to right)

1	DRV	(DRV4 Connector)
2	COM	(Expansion for future modules)
3	ITX	(Ingress Transmitter module V1)
4	12 VDC	(4 Pins Molex Connector)
5	Wireless Antenna	(SMA)
6	GPS Antenna	(SMA)



Power Connections

Black (Ground)
- To vehicle ground (metal body).

Red (Unswitched 12 VDC)
- To 12 VDC electric terminal **not** controlled by ignition switch.

Green (Switched 12 VDC)
- To 12 VDC electric terminal controlled by ignition switch.

Do not to use an intermittent accessory power like heating system

CAUTION!
The ARD4 must be installed on a 12 VDC electric terminal with an inline fuse installed (5 Amp).

CAUTION!
Do not disconnect or modify vehicle security systems such as airbags or seat belts. Security systems wires use only yellow sleeves and yellow connectors. Accidental triggering of these systems may cause severe injuries.

4.1.1 Electrical Installation

The ARD4 uses two connections to the power, a fused connection to the car battery (12 VDC) and a connection to the accessory circuit (switched 12 VDC). This dual power connection allows the ARD4 to complete its operations when the vehicle is shutdown. After all recording and data transfer are completed, the ARD4 shuts itself off. When the switch is closed, the green LED flashes to indicate that the ARD4 is in the closing process.

CAUTION!
We recommend that the power cable be installed by certified personnel.

Safety Precautions for Installation

- Never install this product in places where, or in a manner that it could injure the driver or passengers if the vehicle stops suddenly.

 Never install this product in places where, or in a manner that it may interfere with the driver's operation of the vehicle, such as on the floor in front of the driver's seat, or close to the steering wheel or shift lever.

- Make sure there is nothing behind the dashboard or paneling when drilling holes in them. Be careful not to damage fuel lines, brake lines, electronic components, communication wires or power cables. When using screws, do not allow them to come into contact with any electrical lead.

- When using screws, do not allow them to come into contact with any electrical lead. Vibration may damage wires or insulation, leading to a short circuit or other damage to the vehicle

- To ensure proper installation, use the supplied parts in the manner specified. If any parts other than the ones supplied are used, they may damage the internal components of this product or they may work loosely, and the product may become detached.

- It is extremely dangerous to allow the cables to become wound around the steering column or shift lever. Be sure to install this product, its cables and wiring in a way that does not obstruct or hinder driving.

- Make sure that leads cannot get caught in a door or the sliding mechanism of a seat, resulting in a short circuit.

- Do not install this system where it may (i) obstruct the driver's vision, (ii) impair the performance of any of the vehicle's operating systems or safety features, including airbags, hazard lamp buttons or (iii) impair the driver's ability to operate the vehicle safely.

- Never install the system in front of or next to the place in the dash, door, or pillar from which one of your vehicle's airbags would deploy. Please refer to your vehicle owner's manual for reference to the deployment area of the frontal airbags.

- Do not install the system in a place where it will impair the performance of any of the vehicle's operating systems, including airbags and headrests.

- Please confirm the proper function of your vehicle's other equipment following installation of the navigation system

4.1.2 Antennas Installation

The ARD4 comes with two modules, a wireless one chosen by the customer (Wi-Fi or cellular) and a GPS one. Both the GPS and Wi-Fi (or Cellular) antennas must be connected to the ARD4 in order to maximize sky visibility and data transfer.

4.1.3 Dead Reckoning Installation

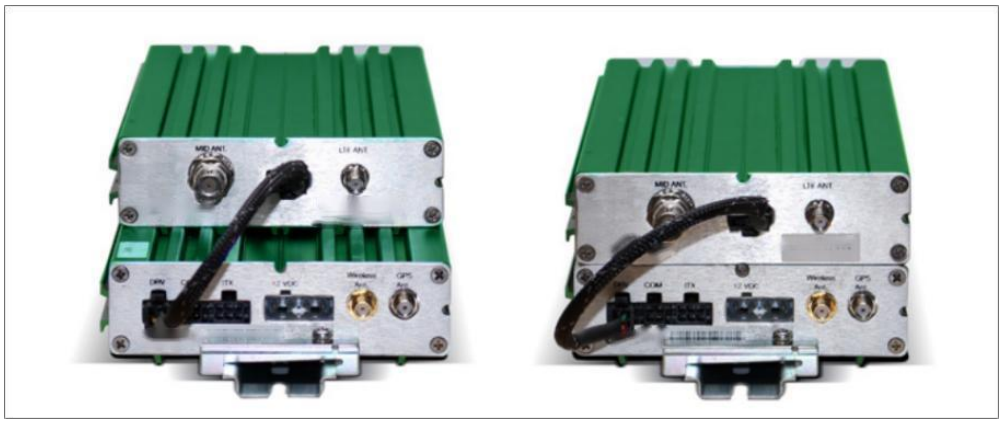
The DRK cable is used only with the dead reckoning option. Green (Speed Signal) to vehicle speed detection circuit lead coming out of the injection computer. Brown (Reverse Signal) to vehicle backup light lead.

4.1.4 On-Board Diagnostic Installation (optional module)

Not available yet.

4.2 DRV4 Installation

The DRV4 slides into the ARD4 and a screw is used on both sides to hold the two units in place. The wire coming with the DRV4 connects to the DRV connector on the ARD4.
(Showed are the way to slide a DRV4 into an ARD4 and the two units screwed together).



4.3 DRV3 *Lite* Installation

When used with an ARD4, the DRV3 *Lite* will connect to it using the USB connector. In this mode the user will view the RF level of the fault found on the DRV3 *Lite* screen.

See user guide manual (Leakage Detector Operation Manual) for more information regarding the DRV3 *Lite* standalone installation.

NOTE

As soon as the DRV3 Lite is plugged and the ARD4 PWR LED indicator is green, the ARD4 will take full possession of the DRV3 *Lite's* functionalities and DRV3 *Lite* menu should not be accessed.

You can plug the DRV3 *Lite* to the ARD4 even if powered OFF.

4.4 DRV3 Installation

The DRV3 can be connected to ARD4 through a docking station providing power and data connections. In this mode the user will view RF levels of the faults founds in frequency agile from 118 to 140 MHz (Mid band tuner) and 572 to 960 MHz (LTE band tuner) on the DRV3 screen.

4.5 ITX2 Installation

The ARD4 and the ITX2 will connect using a USB connector. When connected to theARD4 via the USB cable, the ITX2's buttons are automatically disabled, except for the Power button.

In this mode the user will view RF level transmitted in the screen. The ITX2 module must be used in conjunction with the IRX1 ingress monitoring system installed at the head end.

5. System Operation

5.1 ARD4 Operation

5.1.1 Startup

When the vehicle starts, the ARD4 turns on automatically. The ARD4 PWR LED stays red until the system has completely terminated its boot process. When the boot process has ended the PWR LED becomes green.

5.1.2 GPS

The ARD4 GPS LED stays OFF during the boot process. The LED is red when there is no valid information coming from the GPS (bad GPS antenna connection) and green when there is valid data.

5.1.3 Communication

The ARD4 tries to access the wireless network at startup in order to get its new config file and upload remaining data files that have not yet been transferred. When this is done, it enters in transfer mode and simply tries to upload data file at configurable time interval. During each file transfer the COM LED becomes green. If any error occurs during a transfer this indicator becomes red for 1 second.

5.1.4 Shutdown

When the user turns off the vehicle, the ARD4 enters automatically into shutdown mode (Power LED flashing). It then tries to upload all remaining data files for 5 minutes and then shuts itself off. If the car is turned back ON, during this time the system stays ON and reopens a new data file.

5.1.5 Missing device

If there is a missing device (DRV or ITX), DIAG LED flashes red.

5.2 DRV4 Operation

5.2.1 Startup

When ARD4 starts, DRV4 turns on automatically. The DRV4 PWR LED flashes green when it is ready.

5.2.2 Communication

When DRV4 receives commands from the ARD4, the DRV4 COMM LED will flash green.

5.2.3 Leakage Detection

For any valid leakage detection, the ARD4 DIAG LED and DRV4 MID/LTE (according to leak band) LED becomes green until the leakage becomes undetected.

5.3 ITX2 Operation

5.3.1 Booting

When the ITX2 is booting, the LCD display shows a splash screen with the CPAT Tech logo for about 3 seconds. Then, the main interface appears, summarizing the unit's operating parameters.

5.3.2 Normal Operation

The ITX2 is automatically turned On/Off by the ARD4 when they are linked via the USB cable and buttons are disabled, except for the Power button.

5.4 DRV3 *Lite* Operation

5.4.1 Antenna Selection

Since the ARD4 does not know which antenna is connected to the DRV3 *Lite*, you must configure this option in the DRV3 *Lite's* menu while it is disconnected from the ARD4. See DRV3 *Lite* operating manual for antenna configuration.

5.4.2 USB Hot plug

All DRV3 Lite functional parameters are automatically applied by the ARD4 (operating frequency and operating mode) once plugged to its ARD4 forces DRV3 *Lite* in Mid-band only.

5.5 DRV3 Operation

5.5.1 Reading the measurement

The DRV3 starts up in measurement mode by default, and immediately detects and displays levels for the last frequency selected. Unless the DRV3 has been set up for single band detection, it simultaneously monitors the selected frequencies in the Mid band and the LTE band.

5.5.2 USB Hot plug

All DRV3 functional parameters are automatically applied by the ARD4 (operating frequency and operating mode) once plugged in to it.

6. System Maintenance

6.1 Cleaning of the Equipment

Your CPAT Tech unit can be wiped clean with a damp cloth. Do not immerse the unit in water. Avoid solvents and commercial cleaners.

6.2 Preventative Maintenance

The technician shall do periodic visual inspections on the RF connections and antennas to make sure that there is nothing loose and that there is no rust. Both can affect the performance of the system. Periodic inspection of the power cable shall be done to ensure that the insulation is intact.

If a replacement is required, please contact CPAT Tech for more information.

7. Quick Trouble-Shooting Guide

PROBLEM OR CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
No leakage events detected	Connection problem to vehicle mounted whip antenna.	☑ Verify for continuity between the center pin of the antenna connector and the whip antenna.
		☑ Check for humidity between the whip and the base of the antenna.
		☑ Verify for continuity between the center pin of the antenna connector and center pin on the whip base.
	Is DRV3 connected to ARD4?	☑ Check connection of USB cable between ARD4 and DRV3.
	In-vehicle antenna.	☑ Check to ensure the monopole antenna is connected to the DRV3 while inside the truck. ☑ Ensure the monopole setting is selected on the DRV3 menu while inside the vehicle.
	Detection frequency problem	☑ Verify that the frequency at the head end is not more than 4 kHz offset from the DRV3's detection frequency. ☑ Verify your location and validate frequency area information is correct (frequency, mode, calibration factor). ☑ Install a test point and confirm DRV3 detects correctly the simulated leak in mobile mode and then confirm the leak is still detected when DRV3 is connected through vehicle antenna.
	System noise	☑ Verify noise level at detection frequency to note presence of high noise levels. ForDRV3, it is possible to check interference with the spectrum view (available through its menu).
	Analog video carrier	☑ Sync level may be too low when video tag used. Should be between -12 to -23 dBc, ideally-18 dBc. The use of a color bar generator with 87% modulation is ideal.

PROBLEM OR CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
	No cellular communications	☑ Verify if COM LED comes on (A retry is initiated to communicate every 5 minutes if there is sufficient cellular coverage). ☑ Check if there is a proper connection with the cellular (3inch) antenna. ☑ Validate SIM card account is active with cellular service provider. ☑ Confirm with CPAT Support APN information in ARD4.
	No Wi-Fi communication	☑ Verify if COM LED comes on (A retry is initiated to communicate every 5 minutes if there is sufficient Wi-Fi range). ☑ Check if there is proper connection with the Wi-Fi antenna. ☑ Check if the wireless router has a valid IP address. ☑ Check if cable modem/router are connected and working properly. ☑ Test Wi-Fi communication with another devices (laptop, mobile, etc.). ☑ Do a restart of the modem and the router.
GPS	No Path Displayed on CPAT Website	☑ Check if the GPS antenna connection is good (use GPS LED). ☑ Is the GPS light blinking green or red?
Power	ARD4 Unit off	☑ Check power connector. ☑ Check voltage presence: RED wire: 12 VDC from battery vehicle GREEN wire: Switched (ignition) 12 VDC. BLACK wire: Ground.

ARD4 LED STATUS

POWER LED	start-up and error Normal operation Flashing green indicates shutdown in progress.
GPS LED	Bad or weak GPS signal Valid GPS signal detected
COM LED	Flashing red indicates transfer error Normal data transfer
DIAG LED	Flashing during leakage detection Non detection of DRV3 / ITX2

8. Specifications

8.1 ARD4 Specifications

TECHNICAL	DETAILS
Operating system	Linux
Data storage	Up to 1000 hours of data ≥ 25 weeks @ 40 hours
Power	12 VDC, 200 mA, 16 mA on standby
Wireless link	Wi-Fi or cellular (LTE) Cellular Data Usage; 5MB/month for a typical usage of 20 h/week
GPS module	Accuracy 2.5m (cold start 30 s)
Communication port	2 USB serial ports (host)
Network connector	Proprietary use
Proprietary connectors	1 connector for each of the following: ITX2, DRV4, expansion ports 1 connector for each of the following: GPS and wireless communication module antennas
GPS status LED	'Blanked' during GPS initialization, 'red' when invalid GPS position and 'green' when valid GPS position
Wireless communication LED	'Green' when uploading/downloading to a wireless infrastructure, blinks 'red' if error during transmission and 'off' when module is idle
Power LED	'Red' when booting, 'green' when on, 'red' on error and 'off' when power off, flashing 'green' when shutting down
Operating temperature	-20° to +60°C / -4° to +104°F
PHYSICAL	**DETAILS**
Dimensions [H x W x D]	3.3cm x 11.2cm x 22.3cm / 1.3" x 4.4" x 8.8"
Weight	652g / 23oz

** Specifications subject to change without prior notice.*

8.2 DRV4 Specifications

TECHNICAL	DETAILS
Detector type	Dual-band digital receiver/demodulator
Frequency range	Agile 118 to 140 MHz (mid-band) Agile 600 to 860 MHz (LTE-band)
Tuning resolution	100 Hz
Level range	2 to 4,000 µV/m @ 3 meters (mid-band) 5 to 4,000 µV/m @ 3 meters (LTE-band)
Level accuracy	±1.5 dB mid-band ±2.5 dB LTE-band
System tag	AM [10 to 110Hz] DSB-SC modulation 3,500 to 7,000 Hz Video NTSC (mid-band only)
Measurement units	µV/m and dBµV/m
Power	Via the ARD4 port (+5 VDC 0.8A)
Communication port	ARD4 port (proprietary) and USB serial port
Storage temperature	-20° to +40°C / -4° to +104°F
Operating temperature	0° to +60°C / -32°to +140°F
Maximum relative humidity	80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
PHYSICAL	**DETAILS**
Dimensions [H x W x D]	3.3cm x 11.2cm x 22.3cm / 1.3” x 4.4” x 8.8”
Weight	770g / 27oz

** Specifications subject to change without prior notice.*

8.3 DRV3 *Lite* Specifications

TECHNICAL	DETAILS
Detector type	Dual-band digital receiver/demodulator
Frequency range	Agile 118 to 140 MHz (mid-band) Agile 600 to 860 MHz (LTE-band)
Channel tuning	Configurable via USB port and/or Bluetooth
Tuning resolution	100 HZ
Level range	2 to 4,000 µV/m @ 3 meters (mid-band) 5 to 4,000 µV/m @ 3 meters (LTE-band)
Level accuracy	±1.5 dB mid-band ±2.5 dB LTE-band
System tag	AM [10 to 110 Hz] DSB-SC modulation 3,500 to 7,000 Hz Video NTSC (mid-band only)
Measurement units	µV/m and dBµV/m
Adjustable audible tone	Yes, varies with leak intensity. Can be muted
RF level scale display	Single scale from 0 to 4, 000 µV/m
Operation time	6 hrs. continuous on battery power
Charging temperature*	0°C to 45°C (32°F to 110°C)
Battery charge time	2.25 hrs. for full charge
Communication port	USB serial port and Bluetooth
Storage temperature	-20° to +45°C / -4° to +113°F
Operating temperature	0° to +60°C / -32°F to +140°F
Maximum relative humidity	80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
PHYSICAL	**DETAILS**
Dimensions [H x W x D]	17cm x 8cm x 6.7cm / 6.7” x 3.1” x 1.6”
Weight	450g/16oz

** Specifications subject to change without prior notice.*

8.4 DRV3 Specifications

TECHNICAL	DETAILS
Detector type	Dual-band digital receiver/demodulator
Frequency range	Agile 118 to 140 MHz (mid-band) Agile 572 to 960 MHz (LTE-band)
Channel tuning	Configurable via USB port and by front panel buttons
Tuning resolution	100 HZ
Level range	2 to 4,000 µV/m @ 3 meters (mid-band) 5 to 4,000 µV/m @ 3 meters (LTE-band)
Level accuracy	±1.5 dB mid-band ±2.5 dB LTE-band
System tag	AM [10 to 110 Hz] DSB-SC modulation 3,500 to 7,000 Hz Video NTSC (mid-band only)
Measurement units	µV/m and dBµV/m
Audible tone	Yes, varies with leak intensity.
Adjustable audio volume	Yes, variable
Power	Pack of 2 rechargeable Li-ion cells 3,100 mAh
Operation time	2.5 hrs nominal (both tuners activated) or 4.0 hrs nominal (one tuner activated)
Charging temperature*	0°C to 45°C (32°F to 110°C)
Communication port	USB serial port
Storage temperature	-20° to +45°C / -4° to +113°F
Operating temperature	0° to +40°C / -32°F to +104°F
Maximum relative humidity	80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
PHYSICAL	**DETAILS**
Dimensions [H x W x D]	21cm x 11cm x 4cm / 8.3” x 4.3” x 1.6”
Weight	850g/30oz
DOCK STATION	**DETAILS**
Dimensions [H x W x D]	24cm x 12.5cm x 8cm / 9.4” x 4.9” x 3.2”
Weight	240g/9oz

* *Specifications subject to change without prior notice.*

8.5 ITX2 Specifications

TECHNICAL	DETAILS
Transmitter type	DBPSK
Frequency range	6.78 MHz or 27.12 MHz, set at factory
Bandwidth	30KHz
Radiated power	Maximum: -8 dBm
Antenna connector	BNC 50Ω
Transmitted data	68 bits
Transmission duration	8 ms
Transmission interval	100 ms
Power	Inputs: +12 VDC 1.2A max +7.2VDC li-ion battery pack of 2000 mAh ~ 0.3A
Operation time	6 hrs nominal on battery power
Communication port	USB type A
AC battery charger	3A Input 100-240 VAC~50-60Hz 0.7 A Output: +12 VDC 1.66A Transient over voltage II Rated pollution degree 2
Main supply voltage	Up to ±10% of the nominal voltage
Recommended use	Indoor use or outdoor use without exposing to direct sunshine or wet location
Altitude	Up to 2,000 m (6,560 ft)
Storage temperature	-20° to +45°C / -4° to +113°F
Operating temperature	0° to +40°C / -32°F to +104°F
Maximum relative humidity	80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
PHYSICAL	**DETAILS**
Dimensions [H x W x D]	19.5cm x 8.6cm x 4.5cm / 7.7” x 3.4” x 1.8”
Weight	550g/19oz

** Specifications subject to change without prior notice.*

9. Our Services

CPAT Tech offers a portfolio of services to deploy and support purchased equipment through its Customer Support organization. Customer Support is standard with every product sale and consists of business hour technical assistance, in-warranty repair and calibration.

9.1 Customer Support

Customer Support is available with the sale of every CPAT Tech product. Customer Support services include:

- Product and Service Literature
- Technical Assistance (Business Hour)
- Equipment Repair (Under Warranty Repair and Calibration Services)
- Equipment Return Authorizations (RA)

Contact a Customer Support representative through your local distributor or by accessing www.cpat.tech for information on calibration and warranty policies.

9.1.1 Equipment Return Instructions

Please contact your local Customer Support location via telephone for Return Authorization to accompany your equipment. For each piece of equipment returned for repair, attach a tag that includes the following information:

- Owner's name, address, and telephone number
- The serial number, product type, and model
- Warranty status (If you are unsure of the warranty status of your instrument, contact CPAT Tech's Customer Support.)
- A detailed description of the problem or service requested.
- The name and telephone number of the person to contact regarding questions about the repair.
- The return authorization (RA) number

If possible, return the equipment using the original shipping container and material. If the original container is not available, the unit should be carefully packed so that it will not be damaged in transit. When needed, appropriate packing materials can be obtained by contacting CPAT Tech Support.

CPAT Tech is not liable for any damage that may occur during shipping. The customer should clearly mark the CPAT Tech's issued RA or reference number on the outside of the package and ship it prepaid and insured to CPAT Tech.
Equipment repaired or replaced under warranty will be returned at CPAT Tech's expense to Customer (Canada/USA) or CPAT Tech's representative (all other countries).
All other non-warranty repairs will be returned at Customer's expense to Customer (Canada/ USA) or CPAT Tech's representative (all other countries).

9.2 Limited Product Warranty

9.2.1 Hardware

CPAT Tech warrants to the original end user (Customer) that the new CPAT Tech branded products will be free from defects in workmanship and materials, under normal use, for one (1) year from the date of original shipment.

CPAT Tech warrants repaired products for ninety (90) days from date of shipment. Any Product repaired or replaced under warranty is only warranted for the period of time remaining on the original warranty for the Product.

Any third-party products, including software, included with CPAT Tech products are not covered by this CPAT Tech warranty and CPAT Tech makes no representations or warranties on behalf of such third parties. Any warranty on such products is from the supplier or licensor of the product

9.2.2 Software

CPAT Tech warrants to the Customer that new CPAT Tech branded software and firmware will perform in substantial conformance to program specifications for a period of ninety (90) days from the date of original shipment.
CPAT Tech warrants the media containing software against failure during the warranty period. CPAT Tech makes no warranty or representation that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected.

9.2.3 Exclusions

This warranty excludes:

- Damage to the physical surface of the product, including cracks or scratches to any part.
- Damage caused by misuse, neglect, improper installation or testing, unauthorized attempts to open, repair, or modify the product, or any other cause beyond the range of the intended use.
- Use of the product with any non-recommended device or service if such device or service causes the problem.
- Installation or maintenance of Product by someone other than CPAT Tech or persons certified by CPAT Tech.
- Changes to the Customer environment in which Product was installed.
- Damage caused by accidents, fire, power changes, other hazards, or acts of nature.
- Consumable Product or parts thereof (e.g., parts with an expected useful life of less than ninety (90) days, such as certain batteries).
- Product not returned in accordance with CPAT Tech’s RA procedure.

9.2.4 Refurbished Parts and Prior Testing

Product may incorporate reconditioned or refurbished parts or subassemblies and may have been used in testing prior to sale.

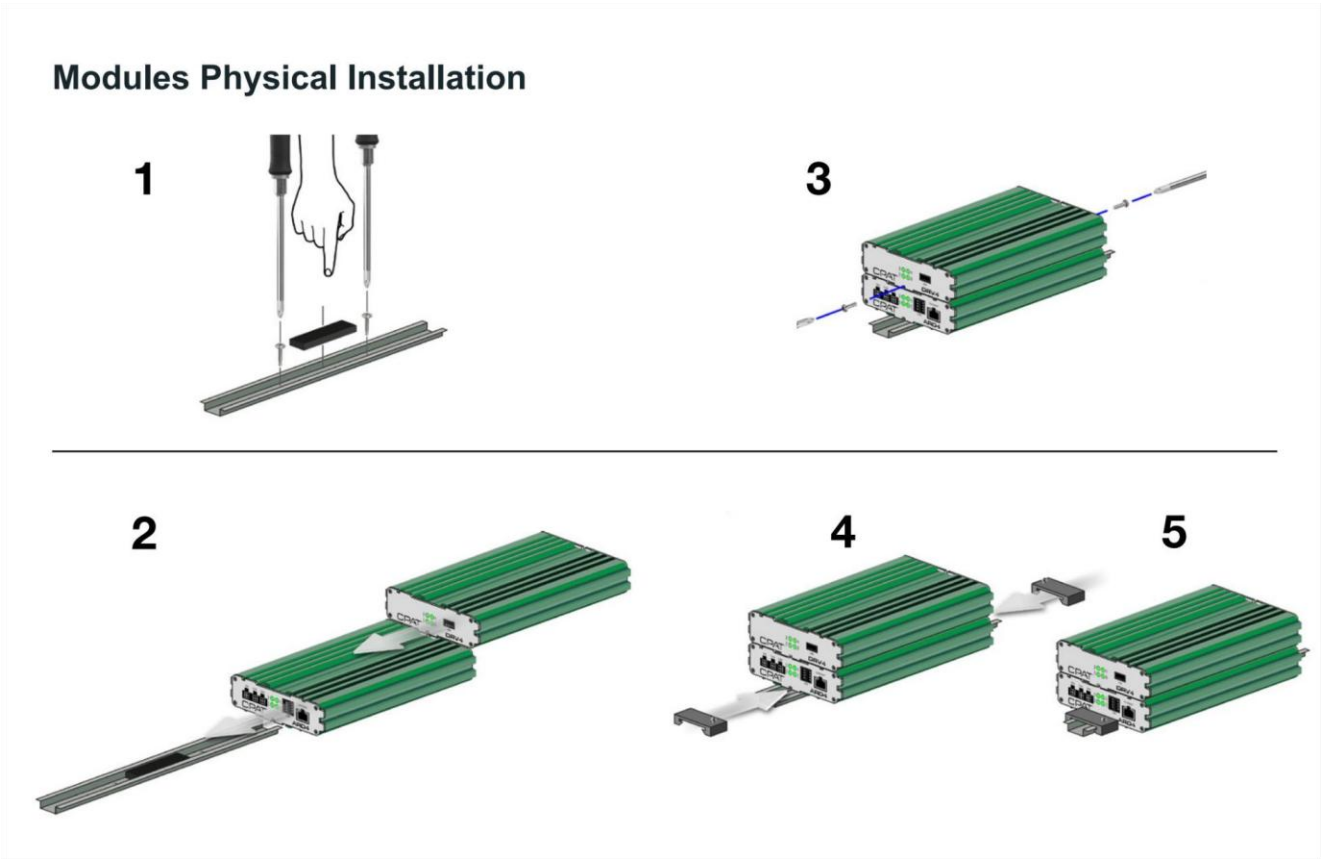
9.2.5 Exclusive Remedies

If any Product materially fails to conform to the limited warranty set forth in this Section (Limited Warranty) and actually fails during the applicable warranty period and under normal use, CPAT Tech shall, at its sole discretion (i) repair or replace the non-conforming Product to remedy the nonconformity identified by Customer in accordance with this Section (Limited Product Warranty); or (ii) issue a credit to Customer for the amounts paid for the Product in exchange for return of the non-conforming Product, in which case Customer's licenses to any Firmware shall be automatically revoked. Customer hereby transfers to CPAT Tech title and ownership of any parts that CPAT Tech replaces.

9.2.6 Disclaimer

THE REMEDIES EXPRESSLY PROVIDED IN THIS SECTION WILL BE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES AND SHALL BE IN LIEU OF ANY OTHER RIGHTS OR REMEDIES CUSTOMER MAY HAVE AGAINST CPAT TECH WITH RESPECT TO ANY NON-CONFORMANCE OF PRODUCTS. EXCEPT AS SPECIFIED IN THIS LIMITED PRODUCT WARRANTY, CPAT TECH MAKES NO EXPRESS REPRESENTATIONS OR WARRANTIES WITH REGARD TO ANY PRODUCT.

CPAT TECH DISCLAIMS ALL IMPLIED WARRANTIES, CONDITIONS, AND REPRESENTATIONS INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OR CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, REGARDLESS OF THE LEGAL THEORY ON WHICH SUCH IMPLIED WARRANTY MAY BE BASED, INCLUDING, WITHOUT LIMITATION, CONTRACT, COURSE OF DEALING, USAGE, OR TRADE PRACTICE.


Modules Physical Installation
1
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